

# Perception & Psychophysics

**Editor, Charles W. Eriksen**  
Department of Psychology  
University of Illinois  
Champaign, Illinois 61820

## ASSOCIATE EDITORS

V. R. Carlson, *National Institute of Mental Health*  
Edward C. Carterette,  
*University of California, Los Angeles*  
Robert Fox, *Vanderbilt University*

James J. Jenkins, *University of Minnesota*  
Alfred B. Kristofferson, *McMaster University*  
Herschel W. Leibowitz, *Pennsylvania State University*  
Irwin Pollack, *University of Michigan*

## CONSULTING EDITORS

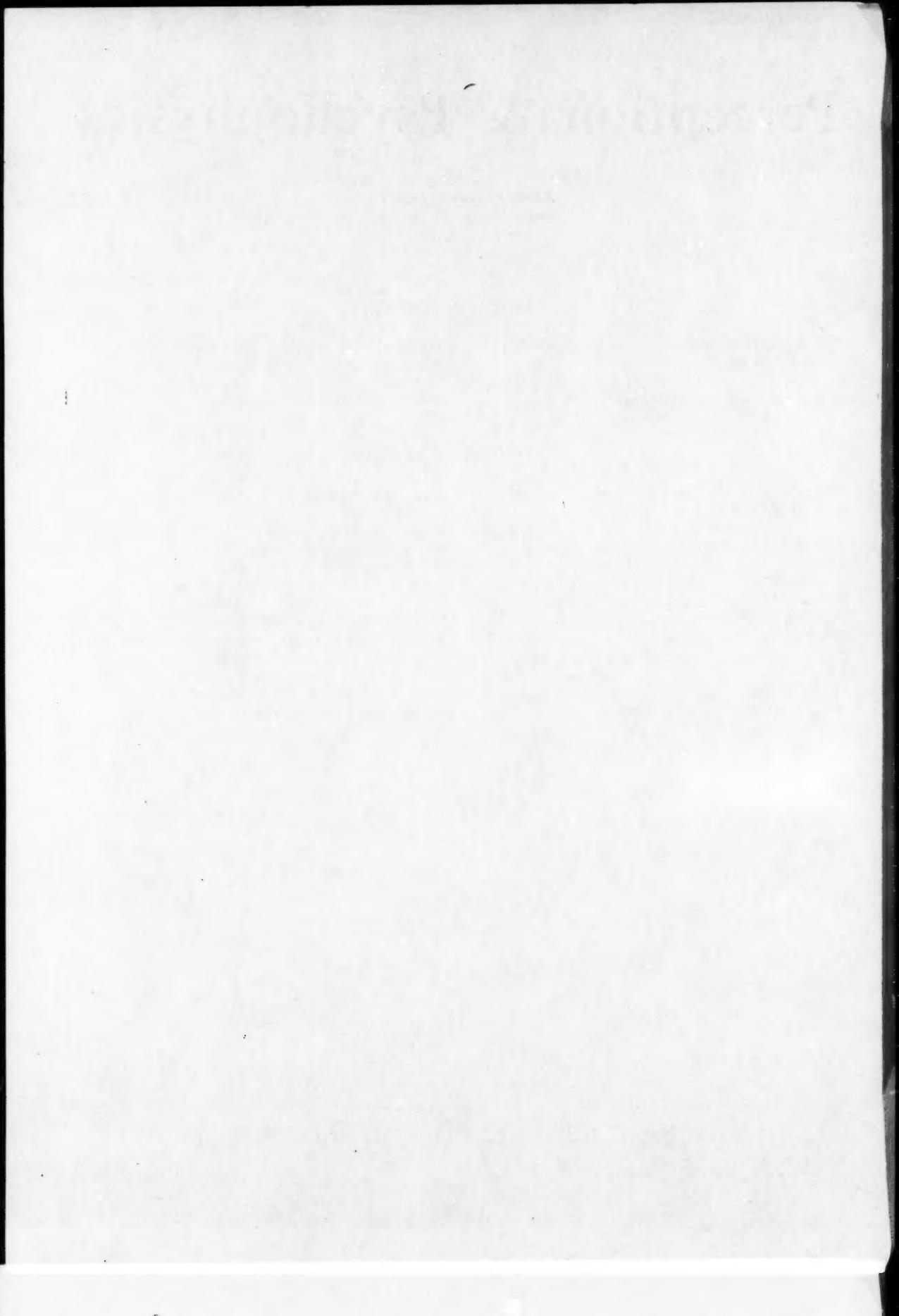
Richard C. Atkinson, *Stanford University*  
Linda M. Bartoshuk,  
*Pierce Foundation, Yale School of Medicine*  
Ira H. Bernstein, *University of Texas, Arlington*  
John Lott Brown, *University of Rochester*  
Emanuel Donchin, *University of Illinois, Champaign*  
S. M. Ebenholtz, *University of Wisconsin, Madison*  
Howard E. Egeth, *Johns Hopkins University*  
Henry C. Ellis, *University of New Mexico*  
William Epstein, *University of Wisconsin, Madison*  
Robert B. Freeman, Jr., *University of Konstanz, Germany*  
Morton Friedman, *University of California, Los Angeles*  
Wendell R. Garner, *Yale University*  
Barbara Gillam, *SUNY, State College of Optometry*  
Walter C. Gogel, *University of California, Santa Barbara*  
David M. Green, *University of California, San Diego*  
  
Clifford T. Morgan, *Director of Publications*

Ira. J. Hirsh, *Washington University*  
Daniel Kahneman, *Hebrew University, Jerusalem*  
William E. Kappauf, *University of Illinois, Champaign*  
Dan R. Kenshalo, *Florida State University*  
Ron Kinchla, *Princeton University*  
Sylvan Kornblum, *University of Michigan*  
David H. Krantz, *University of Michigan*  
Joseph S. Lappin, *Vanderbilt University*  
W. J. M. Levelt, *Nijmegen University, The Netherlands*  
Gregory R. Lockhead, *Duke University*  
James D. Miller, *Central Institute for the Deaf*  
Roy M. Pritchard, *McMaster University*  
Donald L. Schurman, *Emory University*  
Robert W. Sekuler, *Northwestern University*  
Charles S. Watson, *Washington University*  
Eugene R. Wist, *Franklin & Marshall College*  
John I. Yellott, Jr., *University of California, Irvine*

Ann L. Sanford, *Managing Editor*

Volume 13, 1973

A Journal of THE PSYCHONOMIC SOCIETY, Inc.  
Vol. 13, No. 3 June, 1973



### ACKNOWLEDGMENTS

Those listed below served as consultants for Volume 13. We are grateful to them.

- Doris Aaronson, New York University**  
**Lloyd L. Avant, Iowa State University**  
**John Baron, McMaster University**  
**Jacob Beck, University of Oregon**  
**Herbert Bell, Vanderbilt University**  
**Daniel Berlyne, University of Toronto**  
**Eugene Bernstein, University of Michigan**  
**H. G. Birch, Yeshiva University**  
**Randolph Blake, Texas Medical Center, Houston**  
**Donald Blough, Brown University**  
**Lee Brooks, McMaster University**  
**Donald R. Brown, Purdue University**  
**Mark P. Bryden, University of Waterloo**  
**Max Coltheart, University of Waterloo**  
**Stanley Coren, New School for Social Research**  
**Robert Cormack, New Mexico Institute of Mining & Technology, Socorro**  
**C. Douglas Creelman, University of Toronto**  
**Herbert Croitz, V. A. Hospital, Durham, North Carolina**  
**Ruth S. Day, Yale University**  
**A. O. Dick, University of Rochester**  
**M. E. Doherty, Kent State University**  
**W. J. Dowling, University of California, Los Angeles**  
**Nathaniel Durlach, Massachusetts Institute of Technology**  
**Trygg Engen, Brown University**  
**William Estes, Rockefeller University**  
**Emerson Foulke, University of Louisville**  
**Eugene Galanter, Columbia University**  
**George Gescheider, Hamilton College**  
**James J. Gibson, Cornell University**  
**Walter Gogel, University of California, Santa Barbara**  
**J. J. Goodnow, George Washington University**  
**Daniel Green, Harvard University**  
**Jack Hahn, Dumont, New Jersey**  
**E. Rae Harcum, College of William & Mary**  
**Charles Harris, Bell Telephone Laboratories, Murray Hill**  
**Lewis O. Harvey, Jr., Massachusetts College of Optometry**  
**John Hay, University of Wisconsin**  
**Richard Held, Massachusetts Institute of Technology**  
**Julian Hochberg, Columbia University**  
**James Hoffman, University of Illinois**  
**F. N. Jones, University of California, Los Angeles**  
**D. H. Kelly, Stanford Research Institute, Menlo Park**  
**Dan Kenshalo, Florida State University**  
**Larry Kerr, Pennsylvania State University**  
**Doreen Kimura, University of Western Ontario**  
**Roberta Klatzky, Stanford University**  
**Ron Knoll, Bell Telephone Laboratories, Murray Hill**  
**David Laberge, University of Minnesota**  
**Barry Leshowitz, Arizona State University**  
**J. Liebskind, University of California, Los Angeles**  
**W. A. Lindner, California State University, Fullerton**  
**Lawrence Marks, John B. Pierce Foundation, New Haven**  
**L. Matin, Columbia University**  
**Dominic Massaro, University of Wisconsin**  
**Donald H. McBurney, University of Pittsburgh**
- Curtis McIntyre, University of Virginia**  
**Herbert L. Meiselman, U. S. Army Natick Laboratory**  
**D. J. K. Mewhort, Queens University**  
**John A. Michon, Institute for Perception, Soesterberg, The Netherlands**  
**B. B. Murdoch, University of Toronto**  
**David C. Nagel, N. A. S. A. Ames Research Center, Moffett Field, California**  
**Richard Nelson, Pennsylvania State University**  
**Ray Over, University of Queensland, Australia**  
**Dean H. Owen, Ohio State University**  
**Rose Marie Panghorn, University of California, Davis**  
**A. Parducci, University of California, Los Angeles**  
**Richard Pew, University of Michigan**  
**Herbert Pick, University of Minnesota**  
**A. W. Pressey, University of Manitoba**  
**James B. Ranck, University of Michigan**  
**Frank Restle, Indiana University**  
**R. J. Ritsma, University Hospital, Groningen, The Netherlands**  
**Charles E. Robinson, General Motors Technical Center, Warren, Michigan**  
**D. A. Robinson, Wilmer Institute, Baltimore**  
**Irvin Rock, Rutgers University**  
**David Rummelhart, University of California, La Jolla**  
**Ruth Rutschmann, Pennsylvania State University**  
**Jacqueline Sacks, University of Connecticut**  
**Donald Shankweiler, University of Minnesota**  
**Peter Shaw, University of Illinois**  
**Roger N. Shepard, Stanford University**  
**Richard Shiffrin, Indiana University**  
**Arnold M. Small, Jr., University of Iowa**  
**E. E. Smith, Stanford University**  
**Charles Speaks, University of Minnesota**  
**L. Standing, Bishop's University**  
**Robert S. Steinman, Greenbelt, Maryland**  
**Winifred Strange, University of Minnesota**  
**Charles F. Stromeyer, Menlo Park, California**  
**John Swets, Bolt, Beranek & Newman, Inc.**  
**Martin Taylor, Defense Research Laboratory, Downsview, Ontario**  
**Martha Teague, Smith College**  
**Hoben Thomas, Pennsylvania State University**  
**James Townsend, Purdue University**  
**Michael Treisman, Oxford University**  
**Ronald T. Verillo, Syracuse University**  
**R. D. Walk, George Washington University**  
**E. L. Walker, University of Michigan**  
**Hans Wallach, Swarthmore College**  
**Dixon Ward, University of Minnesota Medical School**  
**Blake Wattenbarger, Bell Telephone Laboratories, Murray Hill**  
**George Weaver, University of Minnesota**  
**Daniel J. Weintraub, University of Michigan**  
**Wayne Wickelgren, University of Oregon**  
**Allan Wing, McMaster University**  
**J. J. Zwischenberger, University of Syracuse**

## Contents of Volume 13

### PSYCHOPHYSICS

- Psychophysical estimates of opponent-process response functions by J. M. Eichengreen, 93  
 A constant error in the perception of brief temporal intervals by J. C. Craig, 99  
 Judgmental illusion produced by contrast with expectancy by M. H. Birnbaum and C. T. Veit, 149  
 Comparing objects in memory: Evidence suggesting an internal psychophysics by R. S. Moyer, 180  
 Repeated magnitude estimations with a variable standard: Sequential effects and other properties by L. M. Ward, 193  
 Perceptual dependence: Evidence for an internal threshold by J. Baron, 527  
 Psychophysical methodology: VI. Random method of limits by R. M. Herrick, 548

### SIGNAL DETECTION

- SDT analysis of binary decisions and sensory intensity ratings to noxious thermal stimuli by W. C. Clark and D. J. Dillon, 491  
 Response latencies in the yes/no detection task: An assessment of two basic models by R. Pike and P. Ryder, 224  
 Visual temporal integration for threshold, signal detectability, and reaction time measures by G. E. Bruder and M. L. Kietzman, 293

### VISION (GENERAL)

- Critical fusion frequency as a function of stimulus intensity and wavelength composition by A. J. Wilson and D. L. Kohfeld, 1  
 Distribution of ocular dominance and effect of image clarity by P. A. Ondercin, N. W. Perry, Jr., and D. G. Childers, 5  
 Visibility of an afterimage alone and in the presence of one or two additional afterimages by P. Taves and J. Atkinson, 9  
 Independence of sensitivity on different foveal areas by J. F. Collins, 212  
 Probability summation model for heterochromatic luminance additivity failure at absolute visual threshold by R. W. Massof, 349  
 Selective changes of sensitivity after adaptation to simple geometrical figures by A. Vassilev, 356  
 Effect or prolonged monocular deprivation (homogeneous illumination) on the CFF of the nonoccluded and occluded eye by J. P. Zubek and M. Bross, 499  
 A new afterimage (color contrast afterimage?) by F. Shively, 525  
 Absence of binocular interaction between spatial and color attributes of visual stimuli by R. Over, N. Long, and W. Lovegrove, 534  
 Regions of response transition of color-coded retinal units and an attempted analogy to behavioral response transition by A. Cerf-Beare, 541

### VISUAL MASKING

- Backward and forward masking in the perception of cutaneous stimuli by J.-M. Coquery and B. Amblard, 161  
 Temporal and spatial features in detecting one- and two-dimensional constraints in complementary visual displays by I. Pollack, 241  
 Interaction effects in successive visual displays: An extension of the Eriksen-Collins paradigm by I. Pollack, 367

### FORM PERCEPTION

- Figural goodness and the predictability of figural elements by G. Bear, 32  
 Peripheral and central components in variants of the Mueller-Lyer illusion by J. S. Gigrus, S. Coren, and L. Horowitz, 157  
 Implications of measurement of eye fixations for a psychophysics of form perception by M. A. Baker and M. Loeb, 185  
 Serial learning of nonsense shapes as a function of instructions controlling labeling by L. S. James, 313  
 Factors affecting reports of fragmenting visual images by J. R. Schuck, 382  
 The perception of rotated shapes: A process analysis of shape constancy by D. W. Massaro, 413  
 On the perception of a class of bilaterally symmetric forms by R. Dobson and F. W. Young, 431  
 A mathematical theory of optical illusions and figural aftereffects by E. H. Walker, 467  
 The superiority of the pair-comparisons method for scaling visual illusions by R. B. Howard, M. Wagner, and R. C. Mills, 507

### SPACE PERCEPTION

- Accommodation and stereoacuity by S. M. Luria and J. A. S. Kinney, 76  
 Movement and illumination factors in adaptation to prismatic viewing by B. Wallace, L. E. Melamed, and C. Kaplan, 164  
 A correction to "The retinal reference of the tilt aftereffect" by Coltheart and Cooper by N. J. Wade and R. H. Day, 319  
 Development of sensitivity to static pictorial depth information by C. Benson and A. Yonas, 361  
 Amplitude of visual suppression during the control of binocular rivalry by L. C. Lack, 374  
 Distance perception and the ambiguity of visual stimulation: A theoretical note by E. S. Eriksson, 379  
 Contour synchrony in binocular rivalry by N. J. Wade, 426  
 Effect of prior body experience on adaptation to visual displacement by J. Kahane and C. Auerbach, 461  
 Prism distortion and accommodative change by J. A. Cegalis, 494  
 Counteradaptation after exposure to displaced visual direction by H. Wallach and D. Huntington, 519

### MOTION PERCEPTION

- Visual discrimination of motion: Stimulus relationships at threshold and the question of luminance-time reciprocity by D. C. Henderson, 121  
 Visual perception of motion in depth: Application of a vector model to three-dot motion patterns by E. Börjesson and C. von Hofsten, 169  
 Apparent motion of stimuli presented stroboscopically during pursuit movement of the eye by A. E. Stoper, 201  
 Constancy and illusion of apparent direction of rotary motion in depth: Tests of a theory by R. P. Power and R. H. Day, 217  
 Absolute motion parallax and the specific distance tendency by W. C. Gogel and J. D. Tietz, 284  
 Apparent movement in tridimensional space by F. Attneave and G. Block, 301  
 Autokinesis direction during and after eye turn by J. Levy, 337  
 Visual stream segregation by A. S. Bregman and A. Achim, 451

### HEARING

- Cluster analyses of two acoustic confusion matrices by B. J. T. Morgan, 13

- Cortical potentials evoked by confirming and disconfirming feedback following an auditory discrimination by K. C. Squires, S. A. Hillyard, and P. H. Lindsay, 25  
 The role of the standard in an auditory amplitude discrimination experiment by G. R. Long, 49  
 Detection and recognition of intensity changes in tone and noise: The detection-recognition disparity by N. A. Macmillan, 65  
 Octave generalization of specific interference effects in memory for tonal pitch by D. Deutsch, 271  
 The effect of continuity on auditory stream segregation by A. S. Bregman and G. L. Dannenbring, 308

#### CHEMICAL AND SOMESTHETIC SENSES

- Tactile stimulation: Psychophysical studies of receptor function by G. B. Rollman, 81  
 Gustatory responses during periods of controlled and ad lib cigarette smoking by R. M. Pangborn and I. M. Trabue, 139  
 Mechanical advantage in the size-weight illusion by C. M. Davis, 238  
 Equal-onset contours of vibrotactile stimuli by P. E. Sheldon, 403  
 The reliability of an extrapolated measure of an aversive threshold of pain from radiant stimulation by D. J. Dillon, 487

#### INFORMATION PROCESSING

- Some stages of information processing in a choice reaction-time task by S. R. Palef, 41  
 Stimulus dimensionality and temporal repetition by M. E. Doherty and S. M. Keeley, 60  
 Simultaneous motor and verbal processing of visual information in a modified Stroop test by H. Friedman and P. L. Derkx, 113  
 Verbal interference with perceptual classification: The effect of semantic structure by H. Hock and J. Petrasek, 116  
 Parallel processing of the attributes of single stimuli by E. Saraga and T. Shallice, 261  
 Discrimination of third-order Markov constraints within visual displays by I. Pollack, 276  
 On the degree of attention and capacity limitation in tactile processing by R. M. Shiffrin, J. C. Craig, and E. Cohen, 328  
 On the rate of acquisition of visual information about space, time, and intensity by J. S. Lappin and O. J. Harm, 439  
 Orientation and spatial frequency effects on linear afterimages by N. J. Wade, 446  
 Parallel perceptual processing and decisional strategies: A reinterpretation of the Shaw and LaBerge effect by G. T. Gardner, 517

#### PERFORMANCE

- Prediction outcome probabilities as determinants of choice reaction time by C. P. Whitman and E. S. Geller, 105  
 Simple reaction time as a race between signal detection and time estimation: A paradigm and model by S. Kornblum, 108  
 Reaction time to the offset of brief auditory stimuli by C. E. Robinson, 281  
 Reaction time as a measure of summation of warmth by W. P. Banks, 321  
 The timing of interresponse intervals by A. M. Wing and A. B. Kristofferson, 455

#### VERBAL PROCESSES

- The word superiority effect in brief visual displays: Elimination by vocalization by J. J. Mezrich, 45  
 Mechanisms of aural encoding: VI. Consonants and vowels are remembered as subsets of distinctive features by R. A. Cole, R. N. Haber, and B. D. Sales, 87  
 Speech identification and "knowing that you know" by L. Hochhaus and J. R. Antes, 131  
 Locating clicks in sentences: Left, center, and right by A. S. Reber, 133  
 Phonemic confusability, precategorical acoustic storage, and the suffix effect by R. G. Crowder and C.-M. Cheng, 145  
 Listening for mispronunciations: A measure of what we hear during speech by R. A. Cole, 153  
 Memory search: When does semantic analysis occur? by M. C. Smith and S. M. Abel, 233  
 Some properties of linguistic feature detectors by P. D. Eimas, W. E. Cooper, and J. D. Corbit, 247  
 Auditory and phonetic memory codes in the discrimination of consonants and vowels by D. B. Pisoni, 253  
 Concerning the role of perceptual factors in the serial position effect by G. Underwood, 344  
 Hemispheric specialization for speech opposed by contralateral noise by S. P. Springer, 391  
 Chronometric analysis of speech perception by F. H. Steinheiser, Jr., and D. J. Burrows, 423  
 Precategorical acoustic storage for vowels of short and long duration by R. G. Crowder, 502

#### ATTENTION AND SEARCH

- Factors affecting processing mode in visual search by H. Egeth, J. Atkinson, G. Gilmore, and N. Marcus, 394  
 Influence of stimulus symmetry on visual scanning patterns by P. J. Locher and C. F. Nodine, 408  
 Searching for many targets: An analysis of speed and accuracy by A. Yonas and J. Pittenger, 513

## Author Index Volume 13

- A**  
 Abel, S. M., 233  
 Achim, A., 451  
 Ambiard, B., 161  
 Antes, J. R., 131  
 Atkinson, J., 9, 394  
 Attneave, F., 301  
 Auerbach, C., 461
- B**  
 Baker, M. A., 185  
 Banks, W. P., 321  
 Baron, J., 527  
 Bear, G., 32  
 Benson, C., 361  
 Birnbaum, M. H.,  
     149  
 Block, G., 301  
 Bojesson, E., 169  
 Bregman, A. S., 308,  
     451  
 Bross, M., 499  
 Bruder, G. E., 293  
 Burrows, D. J., 423
- C**  
 Cegalis, J. A., 494  
 Cerf-Baer, A., 541  
 Cheng, C.-M., 145  
 Childers, D. G., 5  
 Clark, W. C., 491  
 Cohen, E., 328  
 Cole, R. A., 87, 153  
 Collins, J. F., 212  
 Cooper, W. E., 247  
 Coquery, J.-M., 161  
 Corbit, J. D., 247  
 Coren, S., 157  
 Craig, J. C., 99, 328  
 Crowder, R. G., 145,  
     502
- D**  
 Dannenbring, G. L.,  
     308  
 Davis, C. M., 238  
 Day, R. H., 217, 319  
 Deutsch, D., 271  
 Derkx, P. L., 113  
 Dillon, D. J., 487,  
     491  
 Dobson, R., 431  
 Doherty, M. E., 60
- E**  
 Egeth, H., 394  
 Eichengreen, J. M.,  
     93  
 Elmas, P. D., 247  
 Eriksson, E. S., 379
- F**  
 Friedman, H., 113
- G**  
 Gardner, G. T., 517
- H**  
 Geller, E. S., 105  
 Gilmore, G., 394  
 Gingras, J. S., 157  
 Gogel, W. C., 284
- I**  
 Haber, R. N., 87  
 Harm, O. J., 439  
 Henderson, D. C.,  
     121  
 Herrick, R. M., 548  
 Hillyard, S. A., 25  
 Hochhaus, L., 131  
 Hock, H., 116  
 Hofsten, C. v., 169  
 Horowitz, L., 157  
 Howard, R. B., 507  
 Huntington, D., 519
- J**  
 James, L. S., 313
- K**  
 Kahane, J., 461  
 Kaplan, C., 164  
 Keeley, S. M., 60  
 Kietzman, M. L.,  
     293  
 Kinney, J. A. S., 76  
 Kohfeld, D. L., 1  
 Kornblum, S., 108  
 Kristofferson, A. B.,  
     455
- L**  
 Lack, L. C., 374  
 Lappin, J. S., 439  
 Levy, J., 337  
 Lindsay, P. H., 25  
 Locher, P. J., 408  
 Loeb, M., 185  
 Long, G. R., 49  
 Long, N., 534  
 Lovegrove, W., 534  
 Luria, S. M., 76
- M**  
 Macmillan, N. A., 65  
 Marcus, N., 394  
 Massaro, D. W., 413  
 Massof, R. W., 349  
 Melamed, L. E., 164  
 Mezrich, J. J., 45  
 Mills, R. C., 507  
 Morgan, B. J. T., 13  
 Moyer, R. S., 180
- N**  
 Nodine, C. F., 408
- O**  
 Ondercin, P. A., 5  
 Over, R., 534
- P**  
 Palef, S. R., 41
- R**  
 Pangborn, R. M.,  
     139  
 Perry, N. W., Jr., 5  
 Petrasek, J., 116  
 Pike, R., 224  
 Pisani, D. B., 253  
 Pittenger, J., 513  
 Pollack, I., 241, 276,  
     367  
 Power, R. P., 217
- S**  
 Sales, B. D., 87  
 Saraga, E., 261  
 Schuck, J. R., 382  
 Shallice, T., 261  
 Sheldon, P. E., 403  
 Shiffrin, R. M., 328  
 Shively, F., 531  
 Smith, M. C., 233  
 Springer, S. P., 391  
 Squires, K. C., 25  
 Steinheiser, F. H.,  
     Jr., 423  
 Stoper, A. E., 201
- T**  
 Taves, P., 9  
 Tietz, J. D., 284  
 Trabue, I. M., 139
- U**  
 Underwood, G., 344
- V**  
 Vassilev, A., 356  
 Veit, C. T., 149
- W**  
 Wade, N. J., 319,  
     426, 446  
 Wagner, M., 507  
 Walker, E. H., 467  
 Wallace, B., 164  
 Wallach, H., 519  
 Ward, L. M., 193  
 Whitman, C. P., 105  
 Wilson, A. J., 1  
 Wing, A. M., 455
- Y**  
 Young, F. W., 431  
 Yonas, A., 361, 513
- Z**  
 Zubek, J. P., 499

# Perception & Psychophysics

**Editor, Charles W. Eriksen**  
Department of Psychology  
University of Illinois  
Champaign, Illinois 61820

## ASSOCIATE EDITORS

V. R. Carlson, *National Institute of Mental Health*  
Edward C. Carterette,  
*University of California, Los Angeles*  
Robert Fox, *Vanderbilt University*

James J. Jenkins, *University of Minnesota*  
Alfred B. Kristofferson, *McMaster University*  
Herschel W. Leibowitz, *Pennsylvania State University*  
Irwin Pollack, *University of Michigan*

## CONSULTING EDITORS

Richard C. Atkinson, *Stanford University*  
Linda M. Bartoshuk,  
*Pierce Foundation, Yale School of Medicine*  
Ira H. Bernstein, *University of Texas, Arlington*  
John Lott Brown, *University of Rochester*  
Emanual Donchin, *University of Illinois, Champaign*  
S. M. Ebenholtz, *University of Wisconsin, Madison*  
Howard E. Egeth, *Johns Hopkins University*  
Henry C. Ellis, *University of New Mexico*  
William Epstein, *University of Wisconsin, Madison*  
Robert B. Freeman, Jr., *University of Konstanz,*  
*Germany*  
Morton Friedman, *University of California, Los Angeles*  
Wendell R. Garner, *Yale University*  
Barbara Gillam, *SUNY, State College of Optometry*  
Walter C. Gogel, *University of California, Santa Barbara*  
David M. Green, *Harvard University*

Clifford T. Morgan, *Director of Publications*

Ira J. Hirsh, *Washington University*  
Daniel Kahneman, *Hebrew University, Jerusalem*  
William E. Kappauf, *University of Illinois, Champaign*  
Dan R. Kenshalo, *Florida State University*  
Ron Kinchla, *Princeton University*  
Sylvan Kornblum, *University of Michigan*  
David H. Krantz, *University of Michigan*  
Joseph S. Lappin, *Vanderbilt University*  
W. J. M. Levelt, *Nijmegen University, The Netherlands*  
Gregory R. Lockhead, *Duke University*  
James D. Miller, *Central Institute for the Deaf*  
Roy M. Pritchard, *McMaster University*  
Donald L. Schurman, *Emory University*  
Robert W. Sekuler, *Northwestern University*  
Charles S. Watson, *Washington University*  
Eugene R. Wist, *Franklin & Marshall College*  
John I. Yellott, Jr., *University of California, Irvine*

Ann L. Sanford, *Managing Editor*

**Volume 14, 1973**

Published bimonthly by  
THE PSYCHONOMIC SOCIETY, Inc.  
1018 West 34th Street, Austin, Texas 78705

Second Class Postage paid at Austin, Texas 78705  
Copyright © 1973 by The Psychonomic Society, Inc.

# Policyholder Information

Policyholder Name: [REDACTED]  
Policyholder Address: [REDACTED]

Policyholder Phone Number: [REDACTED]  
Policyholder Email Address: [REDACTED]

Policyholder Date of Birth: [REDACTED]  
Policyholder Social Security Number: [REDACTED]

Policyholder Gender: [REDACTED]  
Policyholder Marital Status: [REDACTED]

Policyholder Age: [REDACTED]  
Policyholder Height: [REDACTED]

Policyholder Weight: [REDACTED]  
Policyholder Blood Type: [REDACTED]

Policyholder Race: [REDACTED]  
Policyholder Ethnicity: [REDACTED]

## Policy Details

Policy Type: Life Insurance  
Policy ID: P1234567890  
Policy Status: Active

Last Premium Payment: \$100.00  
Last Policy Review: 2023-01-01

CONTENTS OF VOLUME 14

Allmeyer, D. H., See Shiffrin, R. M.	
Angel, R. W., Hollander, M., & Wesley, M. Hand-eye coordination: The role of "motor memory" . . . . .	506
Ambler, B. See Beck, J.	
Auerbach, C., & Leventhal, G. Evidence for all-or-none preperceptual processing in perceptual set . . . . .	24
Beck, J., & Ambler, B. The effects of concentrated and distributed attention on peripheral acuity .	225
Bell, H. H., & Lappin, J. S. Sufficient conditions for the discrimination of motion . . . . .	45
Bernstein, I. H., Proctor, J. D., Proctor, R. W., & Schurman, D. L. Metacontrast and brightness discrimination . . . . .	293
Blackwood, V. See Scott, D. M.	
Blake, R., & Fox, F. The psychophysical inquiry into binocular summation . . . . .	161
Broerse, J. See Over, R.	
Broota, K. D., & Epstein, W. The time it takes to make veridical size and distance judgments . .	358
Brussell, E. M. Attention, brightness contrast, and assimilation: The influence of relative area . .	325
Brussell, E. M. See Coren, S.	
Butler, R. A. The relative influence of pitch and timbre on the apparent location of sound in the median sagittal plane . . . . .	255
Caplan, A. See Weintraub, D. J.	
Carbotte, R. M. Retention of time information in forced-choice duration discrimination . . . . .	440
Carbotte, R. M., & Kristofferson, A. B. On energy-dependent cues in duration discrimination . . . . .	501
Carlson, J. See Fineman, M. B.	
Carn, R. See Gould, J. D.	
Chambers, S. M. See Morgan, B. J. T.	
Cohen, M. M. Elevator illusion: Influences of otolith organ activity and neck proprioception	401
Cohen, R. R. See Wallace, B.	
Colegate, R. L., Hoffman, J. E., & Eriksen, C. W. Selective encoding from multielement visual displays . . . . .	217
Corballis, M. C., & Luthe, L. Perception of lateral movement by monocularly viewing pigeons . .	41
Coren, S., & Brussell, E. M. The effect of texture on the magnitude of simultaneous brightness contrast . . . . .	277
Covit, L. See Donderi, D.	
Cowan, T. M. Some variations of the twisted cord illusion and their analyses . . . . .	553
Cross, D. V. Sequential dependencies and regression in psychophysical judgments . . . .	547
Curtis, D. W. See Rule, S. J.	
Davidson, M. L., Fox, M.-J., & Dick, A. O. Effect of eye movements on backward masking and perceived location . . . . .	110
Day, R. H. The Poggendorff illusion with obtuse and acute angles . . . . .	590
DeWald, C. G. See Geyer, L. H.	
Dick, A. O. See Davidson, M. L.	
Donchin, E., Kubovy, M., Kutas, M., Johnson, R., Jr., & Herning, R. Graded changes in evoked response (P300) amplitude as a function of cognitive activity . . . . .	319
Donderi, D., Seal, S., & Covit, L. Association learning and visual discrimination . . . . .	394
Dowling, W. J. Rhythmic groups and subjective chunks in memory for melodies . . . . .	37
Ebenholtz, S. M., & Paap, K. R. The constancy of object orientation: Compensation for ocular rotation . . . . .	458
Efron, R. Conservation of temporal information by perceptual systems . . . . .	518
Epstein, W. See Broota, K. D.	
Eriksen, C. W., & Hoffman, J. E. The extent of processing of noise elements during selective encoding from visual displays . . . . .	155
Eriksen, C. W. See Colegate, R. L.	
Evans, G. W. See Howard, R. B.	
Fineman, M. B., & Carlson, J. A comparison of the Ponzo illusion with a textural analogue . . . .	31
Foulke, E. See Lappin, J. S.	
Fox, M.-J. See Davidson, M. L.	
Fox, R. See Blake, R.	
Friden, T. P. Whiteness constancy: Inference or insensitivity? . . . . .	81
Friden, T. P. The effects of familiarity in a perceptual matching task . . . . .	487
Galanter, E., & Galanter, P. Range estimates of distant visual stimuli . . . . .	301
Galanter, P. See Galanter, E.	
Gardner, G. T. See Shiffrin, R. M.	
Garner, W. R. See Pomerantz, J. R.	
Garrett, J. B. See Wallace, B.	
Geyer, L. H., & DeWald, C. G. Feature lists and confusion matrices . . . . .	471
Gillam, B. The nature of size scaling in the Ponzo and related illusions . . . . .	353
Giora, Z. See Lavie, P.	
Gopher, D. Eye-movement patterns in selective listening tasks of focused attention . . . . .	259
Gordon, I. E., & Hayward, S. Second-order isomorphism of internal representations of familiar faces . . . . .	334
Gottsdanker, R. Psychological refractoriness and the organization of step-tracking responses . .	60

- h
- Gould, J. D., & Carn, R. Visual search, complex backgrounds, mental counters, and eye movements . . . . . 125
- Groen, M. See Kristofferson, M. W.
- Haddad, G. M. See Kupin, J. J.
- Harvey, N., & Treisman, A. M. Switching attention between the ears to monitor tones . . . . . 51
- Haude, R. H. See Pursell, E. D.
- Hayward, S. See Gordon, I. E.
- Herning, R. See Donchin, E.
- Herrmann, D. J., & McLaughlin, J. P. Language habits and detection in very short-term memory . . . . . 483
- Hildreth, J. D. Bloch's law and a temporal integration model for simple reaction time to light . . . . . 421
- Hillyard, S. A. See Squires, K. C.
- Hock, H. S. The effects of stimulus structure and familiarity on same-different comparison . . . . . 413
- Hoffman, J. E. See Colegate, R. L.
- Hoffman, J. E. See Eriksen, C. W.
- Hollander, M. See Angel, R. W.
- Howard, R. B., Evans, G. W., & McDonald, J. K. Induction-, test-, and comparison-figure interactions under illusion and figural aftereffect conditions . . . . . 249
- Hyvärinen, J. See Scharf, B.
- Johansson, G. Visual perception of biological motion and a model for its analysis . . . . . 201
- Johnson, R., Jr. See Donchin, E.
- Johnston, J. C., & McClelland, J. L. Visual factors in word perception . . . . . 365
- Kelly, D. H., & Savoie, R. E. A study of sine-wave contrast sensitivity by two psychophysical methods . . . . . 201
- Kitterle, F. L. The possible locus of lightness contrast . . . . . 585
- Kosslyn, S. M. Scanning visual images: Some structural implications . . . . . 585
- Krantz, D. H., & Weintraub, D. J. Factors affecting perceived orientation of the Poggendorff transversal . . . . . 90
- Kristofferson, A. B. See Carbotte, R. M.
- Kristofferson, A. B. See Kristofferson, M. W.
- Kristofferson, A. B. See Wing, A. M.
- Kristofferson, M. W., Groen, M., & Kristofferson, A. B. When visual search functions look like item recognition functions . . . . . 186
- Kubovy, M. See Donchin, E.
- Kupin, J. J., Haddad, G. M., & Steinman, R. M. Saccades in Neal's "square of three" . . . . . 298
- Kutas, M. See Donchin, E.
- Lappin, J. S., & Foulke, E. Expanding the tactual field of view . . . . . 237
- Lappin, J. S. See Bell, H. H.
- Lavie, P., & Giora, Z. Spiral aftereffect durations following awakening from REM sleep and non-REM sleep . . . . . 19
- Lavigueur, H. See Malpass, R. S.
- Lefton, L. A. Spatial factors in metacontrast . . . . . 497
- Leventhal, G. See Auerbach, C.
- Lindsay, P. H. See Squires, K. C.
- Lovegrove, W. See Over, R.
- Luthe, L. See Corballis, M. C.
- MacRae, A. W. See Newman, C. V.
- Malpass, R. S., Lavigueur, H., & Weldon, D. E. Verbal and visual training in face recognition . . . . . 285
- Marks, D. F. Visual imagery differences and eye movements in the recall of pictures . . . . . 407
- Marks, L. E., & Stevens, J. C. Temporal summation related to the nature of the proximal stimulus for the warmth sense . . . . . 570
- Marks, L. E. See Stevens, J. C.
- Marmolin, H. Visually perceived motion in depth resulting from proximal changes. I . . . . . 133
- Marmolin, H. Visually perceived motion in depth resulting from proximal changes. II . . . . . 143
- Marshall, A. J., & Stanley, G. The apparent length of rotating arcs under conditions of dark adaptation . . . . . 349
- McClelland, J. L. See Johnston, J. C.
- McDonald, J. K. See Howard, R. B.
- McKelvie, S. J. The meaningfulness and meaning of schematic faces . . . . . 343
- McLaughlin, J. P. See Herrmann, D. J.
- Melamed, L. E. See Wallace, B.
- Merzenich, M. M. See Scharf, B.
- Molino, J. A. Pure-tone equal-loudness contours for standard tones of different frequencies . . . . . 1
- Morgan, B. J. T., Chambers, S. M., & Morton, J. Acoustic confusion of digits in memory and recognition . . . . . 375
- Morton, J. See Morgan, B. J. T.
- Newman, C. V., Whinham, E. A., & MacRae, A. W. The influence of texture on judgments of slant and relative distance in a picture with suggested depth . . . . . 280
- Okulicz, W. C. See Stevens, J. C.
- O'Mahony, M. A note on the reliability of subjective judgment in discerning when the mouth is clear of salt taste stimuli . . . . . 437
- Osman, E., Schacknow, P. N., & Tzuo, P.-F. L. Psychometric functions and a correlation model of binaural detection . . . . . 371
- Over, R. Brightness selectivity in the motion aftereffect . . . . . 542
- Over, R., & Lovegrove, W. Color-selectivity in simultaneous motion contrast . . . . . 445
- Owen, D. H. See Shinar, D.
- Paap, K. R. See Ebenholtz, S. M.
- Pastore, R. E. Detection of periodically and randomly interrupted noise signals . . . . . 581
- Peeke, S. C., & Stone, G. C. Focal and nonfocal processing of color and form . . . . . 71
- Perkins, D. N. Compensating for distortion in viewing pictures obliquely . . . . . 13
- Pohlmann, L. D. See Sorkin, R. D.
- Pomerantz, J. R., & Garner, W. R. Stimulus configuration in selective attention tasks . . . . . 565

- Poranen, A. See Scharf, B.
- Proctor, J. D. See Bernstein, I. H.
- Proctor, R. W. See Bernstein, I. H.
- Prytulak, L. S. The effect of fixation point on the appearance of rectilinearity . . . . . 387
- Prytulak, L. S. Interaction of fixation point and stimulus orientation on the appearance of rectilinearity . . . . . 493
- Pursell, E. D., Sanders, R. E., & Haude, R. H. Sensitivity to sucrose in smokers and nonsmokers: A comparison of TSD and percent correct measures . . . . . 34
- Raab, D. H. See Schacknow, P. N.
- Redding, G. M. Visual adaptation to tilt and displacement: Same or different processes? . . . . . 193
- Rule, S. J., & Curtis, D. W. Reevaluation of two models for judgments of perceptual intervals . . . . . 433
- Sanders, R. E. See Pursell, E. D.
- Savoie, R. E. See Kelly, D. H.
- Schacknow, P. N., & Raab, D. H. Intensity discrimination of tone bursts and the form of the Weber function . . . . . 449
- Schacknow, P. N. See Osman, E.
- Scharf, B., Hyvärinen, J., Poranen, A., & Merzenich, M. M. Electrical stimulation of human hair follicles via microelectrodes . . . . . 273
- Schurman, D. L. See Bernstein, I. H.
- Scott, D. M., & Blackwood, V. Response latencies of rats during behavioral thermoregulation . . . . . 531
- Seal, S. See Donderi, D.
- Seymour, P. H. K. Stroop interference in naming and verifying spatial locations . . . . . 95
- Shaw, P., & Weigel, G. A. Effects of bars and blanks on recognition of words and nonwords embedded in a row of letters . . . . . 117
- Shiffrin, R. M., Gardner, G. T., & Allmeyer, D. H. On the degree of attention and capacity limitations in visual processing . . . . . 231
- Shinar, D., & Owen, D. H. Effects of form rotation on the speed of classification: The development of shape constancy . . . . . 149
- Sorkin, R. D., & Pohlmann, L. D. Some models of observer behavior in two-channel auditory signal detection . . . . . 101
- Squires, K. C., Hillyard, S. A., & Lindsay, P. H. Vertex potentials evoked during auditory signal detection: Relation to decision criteria . . . . . 265
- Stanley, G. See Marshall, A. J.
- Steinman, R. M. See Kupin, J. J.
- Stevens, J. C., Okulicz, W. C., & Marks, L. E. Temporal summation at the warmth threshold . . . . . 307
- Stevens, J. C. See Marks, L. E.
- Stone, G. C. See Peeke, S. C.
- Templeton, W. B. The role of gravitational cues in the judgment of visual orientation . . . . . 451
- Treisman, A. M. See Harvey, N.
- Tzuo, P.-F. L. See Osman, E.
- Wade, N. J. Orientation and spatial frequency effects on linear afterimages: The retinal reference for selectivity—A supplementary report . . . . . 384
- Wallace, B., & Garrett, J. B. Reduced felt arm sensation effects on visual adaptation . . . . . 597
- Wallace, B., Melamed, L. E., & Cohen, R. R. An analysis of aftereffects in the measurement of the correction effect . . . . . 21
- Ward, L. M. Use of Markov-encoded sequential information in numerical signal detection . . . . . 337
- Weigel, G. A. See Shaw, P.
- Weintraub, D. J., & Caplan, A. The helping hand: How to bias kinesthetic aftereffects by instructional set . . . . . 212
- Weintraub, D. J. See Krantz, D. H.
- Weldon, D. E. See Malpass, R. S.
- Wenderoth, P. M. The effects of tilted outline frames and intersecting line patterns on judgments of vertical . . . . . 242
- Wesley, M. See Angel, R. W.
- Whinham, E. A. See Newman, C. V.
- Willott, J. F. Perceptual judgments with discrepant information from audition and proprioception . . . . . 577
- Wing, A. M., & Kristofferson, A. B. Response delays and the timing of discrete motor responses . . . . . 5

### ACKNOWLEDGMENTS

Those listed below served as consultants for Volume 14. We are grateful to them.

- Doris Aaronson, *New York University*  
 C. H. Baker, *Defence & Civil Institute of Environmental Medicine, Canada*  
 William Banks, *Pomona College*  
 Albert S. Bergman, *McGill University*  
 Robert C. Calfee, *Stanford University*  
 Stanley Coren, *University of British Columbia*  
 Robert Cormack, *New Mexico Institute of Mining & Technology, Socorro*  
 C. Douglas Creelman, *University of Toronto*  
 Nat Durlach, *Massachusetts Institute of Technology*  
 Barbara A. Eriksen, *University of Illinois*  
 William K. Estes, *Rockefeller University*  
 J. M. Foley, *University of California, Santa Barbara*  
 Eugene Galanter, *Columbia University*  
 Ralph N. Haber, *University of Rochester*  
 Richard Harshman, *University of California, Los Angeles*  
 Lewis O. Harvey, Jr., *Massachusetts College of Optometry*  
 John Hay, *University of Wisconsin*  
 Bela Julesz, *Bell Laboratories, Murray Hill*  
 Ron Knoll, *Bell Laboratories, Murray Hill*  
 Alan Liberman, *University of Connecticut*  
 Jane Mackworth, *Stanford University School of Medicine*  
 Lawrence E. Marks, *John B. Pierce Foundation Lab*  
 Donald H. McBurney, *University of Pittsburgh*  
 Herbert L. Meiselman, *U. S. Army Natick Laboratory*  
 John A. Michon, *Institute for Perception, Soesterberg, Netherlands*  
 H. H. Mikaelian, *University of Georgia*  
 H. Moskowitz, *U. S. Army Natick Laboratory*  
 Rose Marie Pangborn, *University of California*  
 A. Parducci, *University of California, Los Angeles*  
 R. D. Patterson, *Defence & Civil Institute of Environmental Medicine, Canada*  
 M. J. Penner, *Bell Laboratories, Murray Hill*  
 Herbert L. Pick, *University of Minnesota*  
 D. J. Piggins, *University of Guelph*  
 Michael Posner, *University of Oregon*  
 D. E. Robinson, *Indiana University*  
 Irvin Rock, *Rutgers University*  
 Mark Rudnick, *Colorado Medical Center, Denver*  
 David Rummelhart, *University of California, La Jolla*  
 Ruth Rutschmann, *Pennsylvania State University*  
 Phillip Salapatek, *University of Minnesota*  
 Raymond Sanders, *University of Akron*  
 Donald M. Scott, *Wofford College*  
 S. Sharpless, *Albert Einstein School of Medicine*  
 Richard Shiffrin, *Indiana University*  
 Arnold M. Small, Jr., *University of Iowa*  
 George Sperling, *Bell Laboratories, Murray Hill*  
 Saul Sternberg, *Bell Laboratories, Murray Hill*  
 S. Sutton, *New York, New York*  
 James Townsend, *Purdue University*  
 Michael Treisman, *Oxford University*  
 William Uttal, *University of Michigan*  
 Richard Warren, *University of Wisconsin, Milwaukee*  
 Carroll T. White, *Naval Electronic Laboratory Center, San Diego*  
 Daniel J. Weintraub, *University of Michigan*  
 J. J. Zwislocki, *Syracuse University*

